

STP Quarterly Review

07 Aug 2014

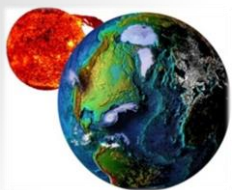
3QFY14



William Denig
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William.Denig@noaa.gov



OUTLINE

Solar & Terrestrial Physics Division

→ STP Division Overview

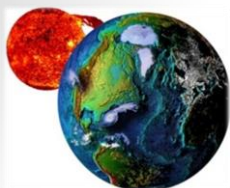
Milestones & Metrics

Program Updates

Special Interest Items

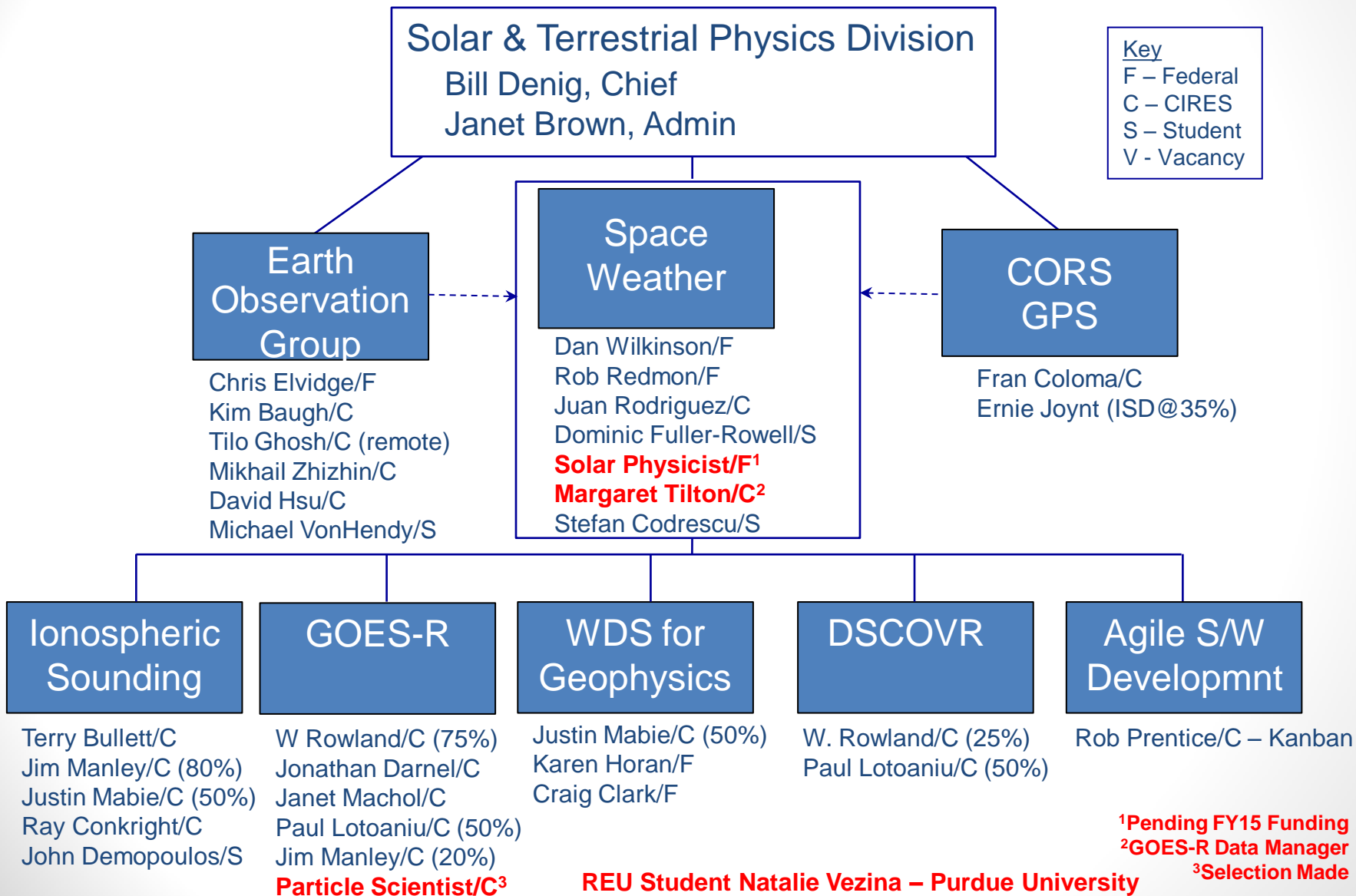
Latest from the EOG

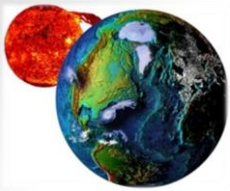
Issues & Summary



STP Division Overview

STP Organizational Chart



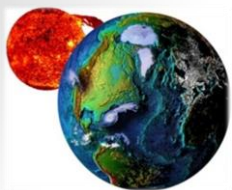


STP Division Overview

Featured Baby of the Quarter

Tilottama Ghosh (Tilo) gave birth to Sahira (meaning mountain, Sanskrit origin) to a baby girl on the 9th of April. Tilo is a member of the Earth Observation Group but works remotely from New Delhi, India





STP Division Overview

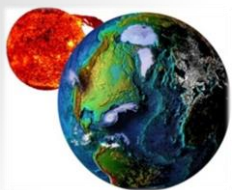
Hail and Farewell

Dr. Thomas Berger is the new SWPC Director with a first duty day of 28 Jul. Tom replaces Tom Bogdan who left in Jan 2012.

Dr. Berger comes to SWPC from the National Solar Observatory in Sunspot, NM where he served as the Project Scientist for the Daniel K. Inouye Solar Telescope.

Tom holds a Ph.D. in Applied Physics/Astrophysics, M.S. in Mechanical Engineering and Fluid Mechanics, both from Stanford University, and a B.S. in Engineering Physics from University of California, Berkeley.





STP Division Overview

Hail and Farewell

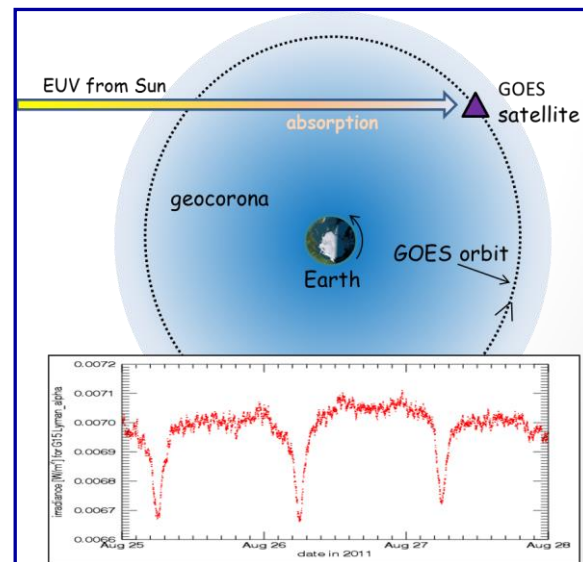
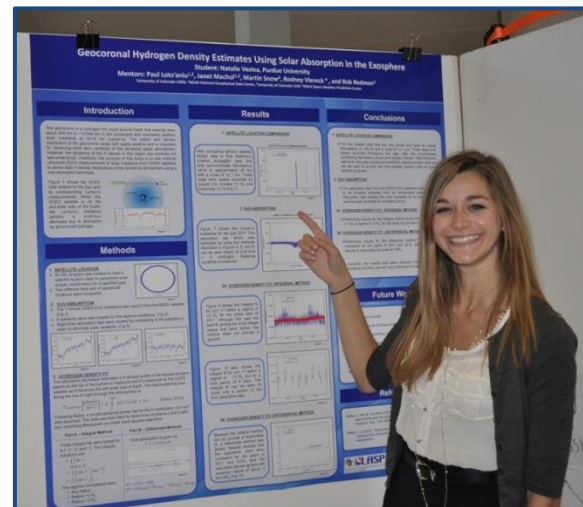


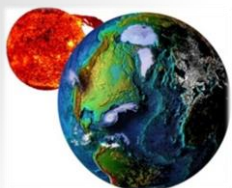
Purdue University senior Natalie Vezina spent this summer at NGDC participating in the NSF-funded Research Experiences for Undergraduates (REU) program, organized through LASP.

Mentors were J. Machol, P. Loto'aniu, M. Snow (LASP), R. Viereck (SWPC) and R. Redmon – 5 bosses and 1 worker???

Overall project is to estimate the geocoronal hydrogen density distribution through the absorption of solar Lyman- α emissions at 121.567 nm in GOES-EUV data. Applications include improved satellite drag models and upper atmospheric chemistry research.

Natalie's efforts are a start to next year's project funded through the CIRES Innovative Research Program.





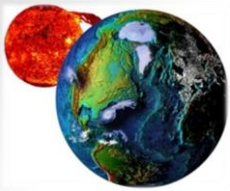
STP Division Overview

NOAA Employee of the Month



Dr. Rob Redmon was selected as the NOAA Employee of the Month for July 2014. *"In recognition and appreciation of a NOAA employee who has made significant contributions to the agency and has demonstrated exceptional and sustained effort toward accomplishing our mission."*





STP Division Overview

Customer Service Excellence



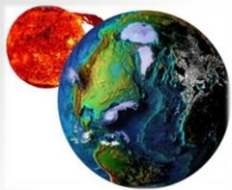
Customer Service Excellence Award

DSCOVR (nominated by Mike Simpson)

- William Rowland
- Paul Loto'aniu

GOES-R (nominated by Bob Iacovazzi)

- William Roland
- Paul Loto'aniu
- Janet Machol
- Jon Darnel
- Juan Rodriguez
- Alysha Reinard (SWPC)



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Solar & Terrestrial Physics Division

STP Division Overview

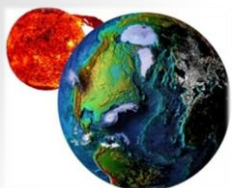
➔ Milestones & Metrics

Program Updates

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Latest from the EOG

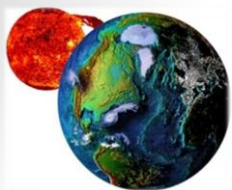
Issues & Summary



Milestones and Metrics

STP FY14 Milestones

Quarter	Milestone	AOP	Status
Q1	Produce Radiation Belt Indices for satellite situational awareness as requested by the Air Force Weather Agency. (Green)	NO	C
Q2	Ensure required infrastructure is in place to receive, archive and disseminate Deep Space Climate Observatory (DSCOVR) solar-wind data products prior to the DSCOVR launch readiness date. (Denig)	YES	C
Q2	Return the Ap* geomagnetic index to operations. (Mabie)	NO	C
Q2	Implement ingest of the NOAA Space Environment Monitor data into the NASA Coordinated Data Analysis web to increase public access to the data. (Redmon)	NO	C
Q3	Complete delivery of Level 2+ product Algorithm Theoretical Basis Documents for the Geostationary Operational Environmental Satellite series-R space weather products. (Rowland)	NO	C
Q3	Deliver to the GOES-R Program Office an initial set of calibration and validation tools for Post-Launch Testing of the space weather sensors on the GOES-R series spacecraft. (Rowland)	NO	Y
Q4	Complete an initial re-design of the Space Physics Interactive Data Resource to enable more efficient processing and enhanced usability. (Zhizhin)	NO	Y
Q4	Recalibrate the NOAA solar irradiance data product from the Extreme Ultraviolet Sensors on the GOES-13, GOES-14 and GOES-15 satellites and provide public access to the data. (Machol)	NO	
Q4	Initiate construction of a state-of-the-art ionospheric sounder in the Antarctic for the Korean space weather program. (Bullett)	NO	
Q4	Create initial "Cloud-free Composite of Nightlights of the World" product using data from the NOAA Visible Infrared Imaging Radiometer Suite. (Elvidge)	YES	
			As of 30 Jul 2014



Milestones and Metrics

Milestone: GOES-R L2+ SWx Algorithms



Milestone: Complete delivery of Level 2+ product Algorithm Theoretical Basis Documents for the Geostationary Operational Environmental Satellite series-R space weather products. (Rowland)

Set 3 Algorithms:

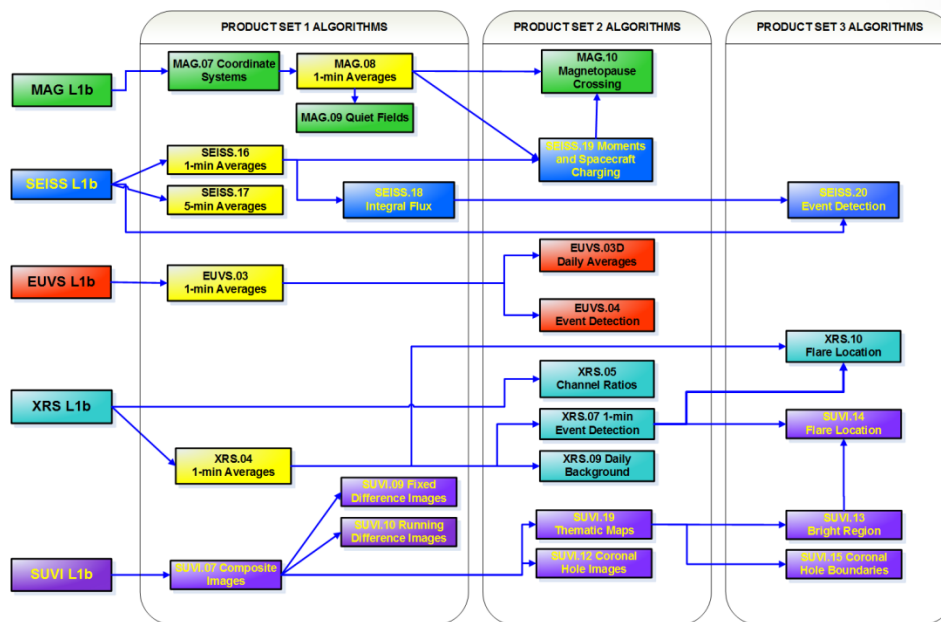
SEISS.20 Event Detection

XRS.10 Flare Location

SUVI.13 Bright Region

SUVI.14 Flare Location

SUVI.15 Coronal Hole Boundary



Completion

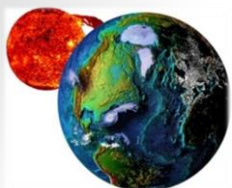
Planned: 30 Jun 14

Actual: 30 Jun 14

Status:



Complete. The full suite of L2+ algorithms have been completed and are ready for SPADES. A total of 29 algorithms have been delivered to the Program.

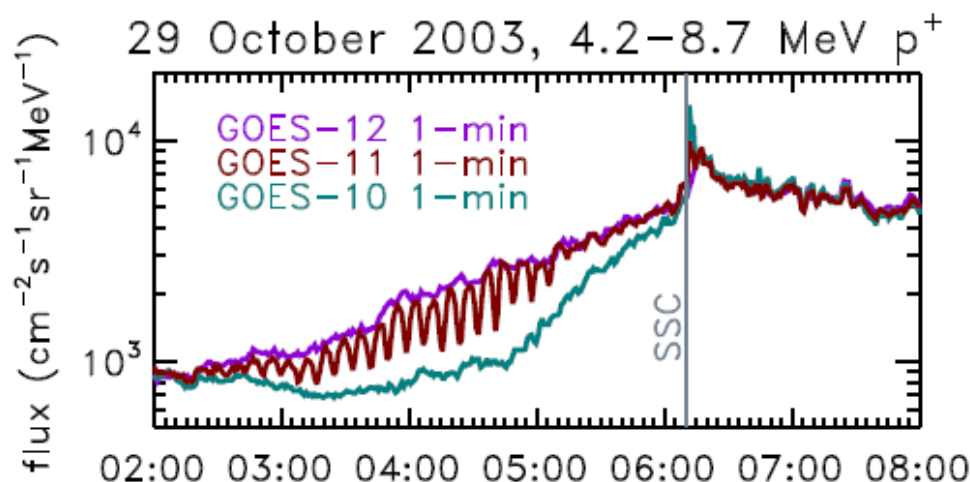
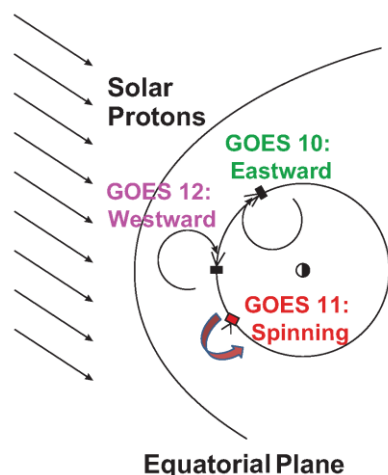


Milestones and Metrics



Milestone: GOES-R Tools

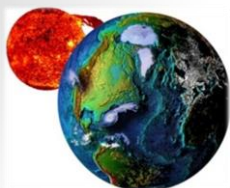
Milestone: Deliver to the GOES-R Program Office an initial set of calibration and validation tools for Post-Launch Testing of the space weather sensors on the GOES-R series spacecraft. (Rowland)



Cutoffs strongly suppressed when $P_{dyn} > 10 \text{ nPa}$: intercalibrate!

Completion: Planned: 30 June 2014 Actual: *TBD*

Status: **Y** Activity was underfunded in FY14. Although team members have independently developed a subset of the planned tools to support Cal/Val activities none of these have been transitioned to GOES-R. \$355K plus-up expected in FY15.



Milestones and Metrics

FY14 Metrics Overview

Space Weather Metric							
Goal	Objective	Performance Measure	POC	1QFY14	2QFY14	3QFY14	4QFY14
Weather-Ready Nation (NWS)	A More Productive and Efficient Economy Through Environmental Information Relevant to Key Sectors of the U.S. Economy	Maintain a greater than 97% (2-sigma, cumulative distribution) of available Space Environment Monitor (SEM) data from the Geostationary Operational Environmental Satellites (GOES) archived on an annual basis	Wilkinson	100%	100%	100%	
Ionosonde							
Goal	Objective	Performance Measure	POC	1QFY13	2QFY13	3QFY13	4QFY13
Weather-Ready Nation (NWS)	Resilient Coastal Communities That Can Adapt To The Impacts Of Hazards And Climate Change	Acquire, process and disseminate >97% (2-sigma, cumulative distribution) of available real-time ionosonde data within 1 hour [TBD] of receipt	Bullett	100%	100%	100%	
Nighttime Lights Metric							
Goal	Objective	Performance Measure	POC	1QFY13	2QFY13	3QFY13	4QFY13
Climate Adaptation and Mitigation (CS)	Improved Scientific Understanding of the Changing Climate System and Its Impacts	Acquire, process and disseminate >97% (2-sigma, cumulative distribution) of available real-time nighttime lights imagery within 3 hours of receipt	Elvidge	100%	100%	100%	
CORS (See Note)							
Goal	Objective	Performance Measure	POC	1QFY13	2QFY13	3QFY13	4QFY13
Resilient Coastal Communities and Economics (NOS)	Resilient Coastal Communities That Can Adapt To The Impacts Of Hazards And Climate Change	Provide a >97% (2-sigma, cumulative distribution) availability for CORS near-real-time data to the NWS Space Weather Prediction Center (SWPC) as per the '4-way' Memorandum of Agreement and subject to normal business-hour response times.	Coloma	100%	100%	99% see note	

As of 04 Aug 2014



Greater than 99% (3-sigma) Cumulative Distribution



Greater than 97% (2-sigma) Cumulative Distribution

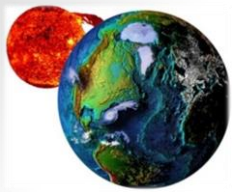


Greater than 84% (1-sigma) Cumulative Distribution



Below 84.1% (1-sigma) Cumulative Distribution

Note: Decreased capability due to 40-minute outage (NGDC maintenance) plus CORS-East IT snafu's



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STP Division Overview

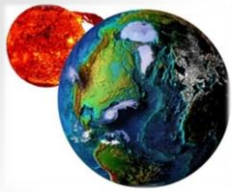
Milestones & Metrics

➔ Program Updates

Special Interest Items

Latest from the EOG

Issues & Summary



Space Weather Team

GOES-R: Living With Space Weather



GOES-R

Geostationary Operational Environmental
Satellites R-Series

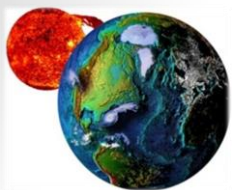
Living With Space Weather



0:21 / 3:04



[Link](#)



Space Weather Team

Status: GOES-R Status – SME Assessment






SME assessments do not represent Program views

FOUO




EXIS

H/W  (G) No Issues
L1b  (G) No Issues
L2+  (G) No Issues

MAG

H/W  (Y/G) Less mature design – actual performance may not be as predicted
L1b  (R/Y) Impending waivers will likely result in inferior products
L2+  (G) No Issues




SEISS

H/W  (Y/G) Hardware waivers will impact overall product performance
L1b  (G) No issues
L2+  (G) No issues

SUVI

H/W  (G) No issues
L1b  (G) No issues
L2+  (G) No Issues

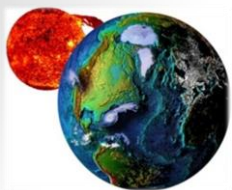
Products

L0  (Y/G) LZSS access firming up; Interface development separately funded¹
L1b  (Y) Limited independent development; Unfunded Cal-Val tool development¹
L2+  (Y) AA decision to implement L2+ processing within IDP; FY16 PCS submitted

Access

PDA  (Y/G) PDA is path forward for SPADES IOC; Uncertain access to prototype L1b data¹⁺
GRB  (Y/G) GRB base-lined for SPADES FOC; Uncertain access to prototype L1b data¹⁺
CLASS  (G) No issues
SPADES  (G) No issues

¹Assessment or text updated



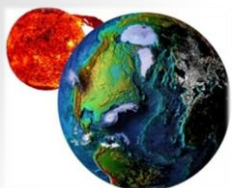
Space Weather Team

Status: GOES-R Status – History



FOUO

		3QFY14	2QFY14	1QFY14
EXIS	H/W	G	G	G
	L1b	G	G	G
	L2+	G	G	G
MAG	H/W	Y/G	Y/G	Y/G
	L1b	R/Y	R/Y	R/Y
	L2+	G	G	G
SEISS	H/W	Y/G	Y/G	Y/G
	L1b	G	G	G
	L2+	G	G	G
SUVI	H/W	G	G	G
	L1b	G	G	G
	L2+	G	G	G
Products				
	L0	Y/G	Y/G	Y
	L1b	Y	Y	Y
	L2+	Y	Y	R
Access				
	PDA	Y/G	Y	G
	GRB	Y/G	Y	G
	CLASS	G	G	G
	SPADES	G	G	Y

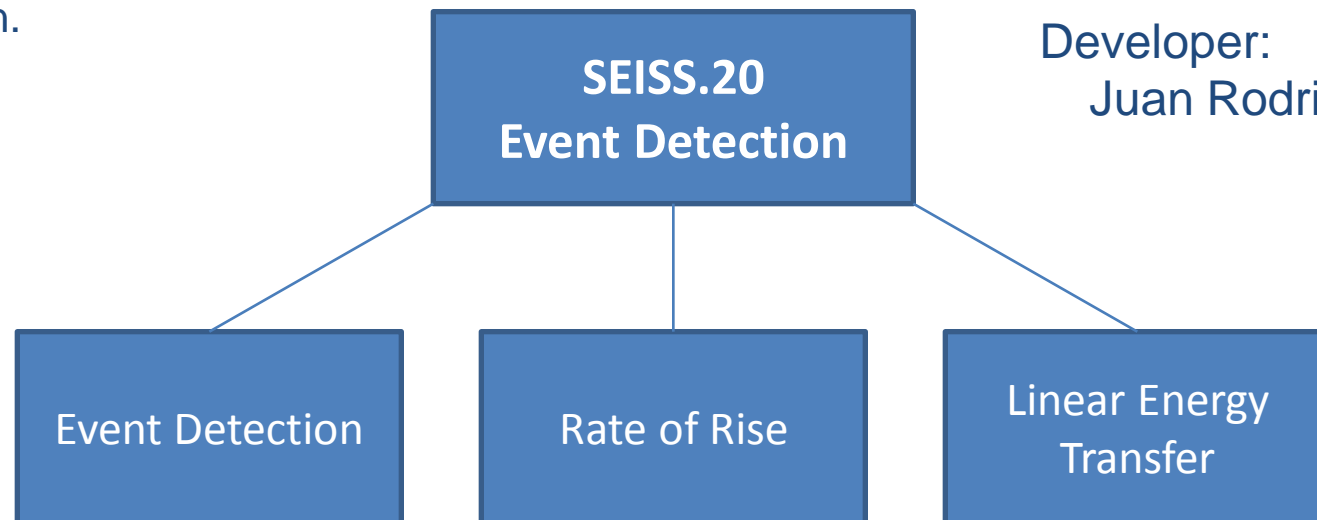


Space Weather Team

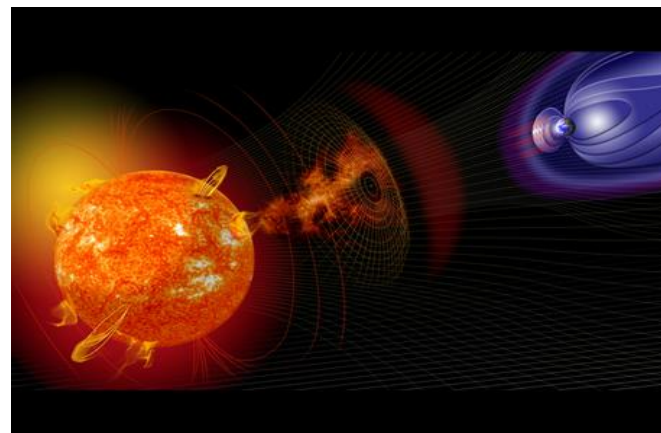
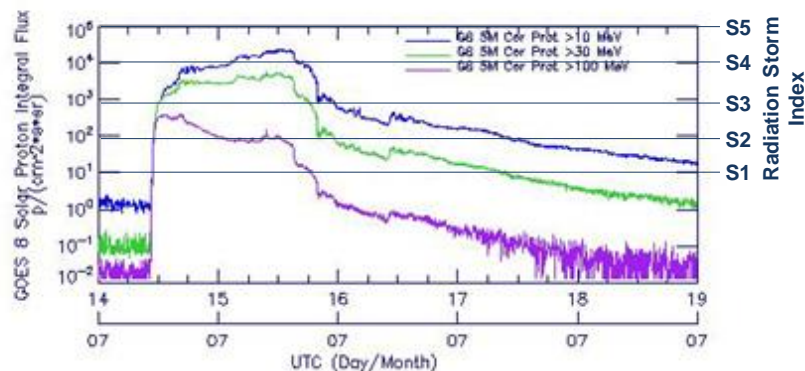
GOES-R L2+: SEISS.20 (Event Detection)

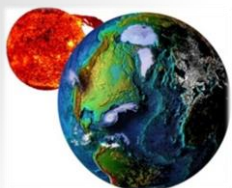


Trifecta of algorithms used to detect the onset of a solar proton event, calculate the rate of rise to sequential levels on the NOAA Space Weather Scales and determine the linear energy transfer (LET) of penetrating particle radiation for satellite system design.



2000 Jul 14 00:00:00





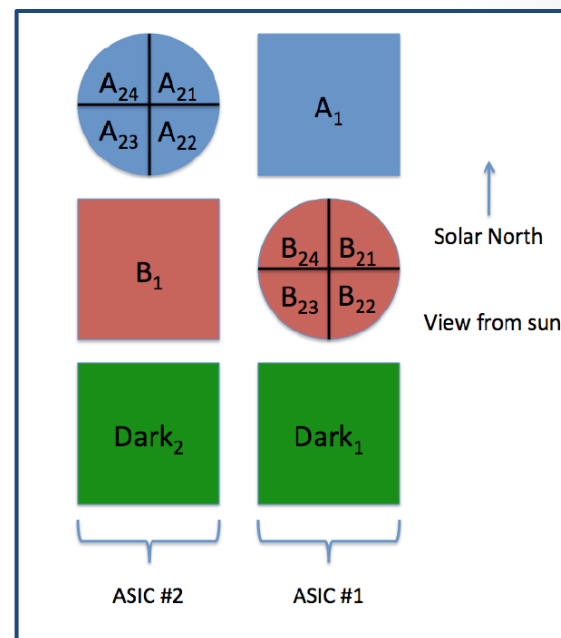
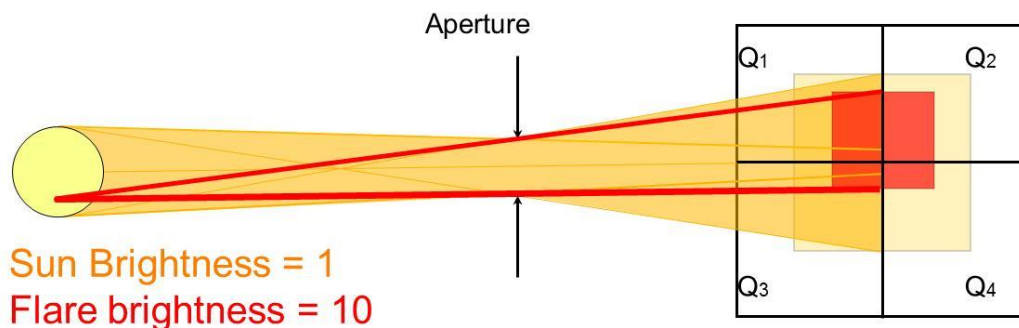
Space Weather Team

GOES-R L2+: XRS.10 (Flare Location)

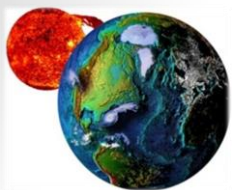


XRS.10 (Flare Location) – The XRS quad-diode design is used to determine the location of an erupting flare on the solar disk.

Developer: Alysha Reinard



	All flares	Good backgrounds
X-class flares	3.0±1.7 arcminutes	3.0±1.6 arcminutes
M-class flares	4.0±3.4 arcminutes	3.7±3.2 arcminutes
C-class flares	7.3±6.1 arcminutes	6.7±5.6 arcminutes

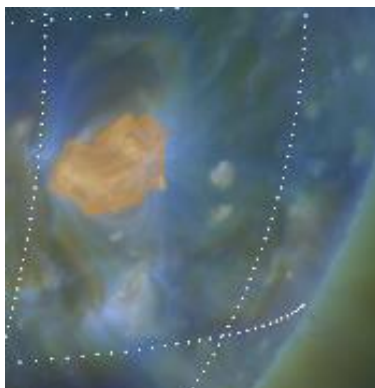


Space Weather Team

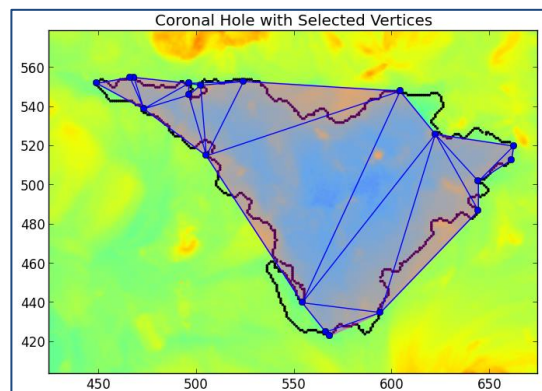
GOES-R L2+: SUVI.13-15 (Solar Imagery)



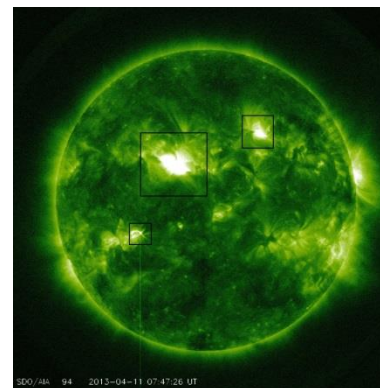
SUVI.13
Bright Region



SUVI.15
Coronal Hole
Boundaries



SUVI.14
Flare Location

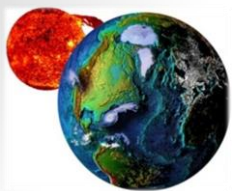


SUVI.13 (Bright Region) – Bright Regions in the EUV are often associated with sunspots and are frequently the source of EUV flares.

SUVI.15 (Coronal Hole Boundaries) – Automatically identify individual coronal holes and determine a finite number of vertices that accurately describe the coronal hole.

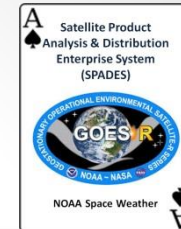
SUVI.14 (Flare Location) – Algorithm reports the location of the flare in heliographic coordinates and provides relevant information on the originating bright region.

Developer: Jon Darnel



Space Weather Team

SPADES: Status Update

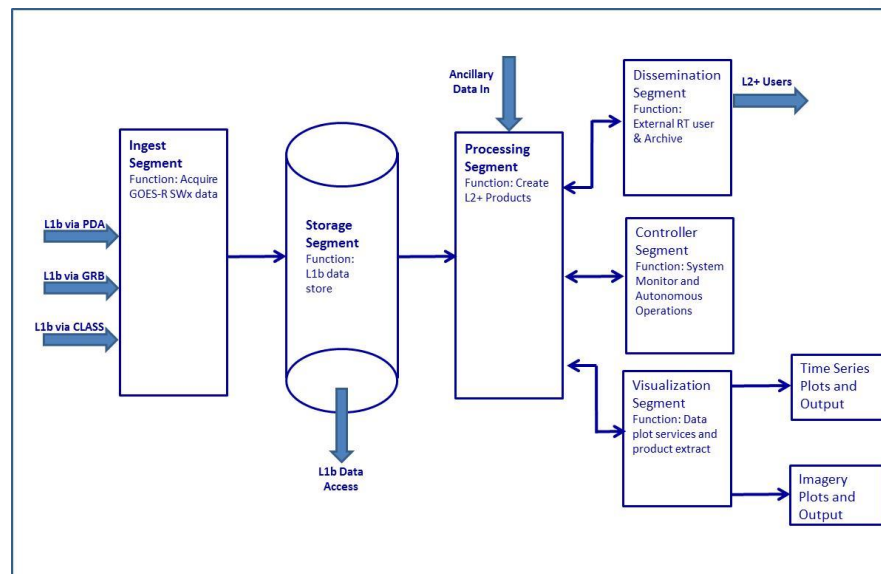


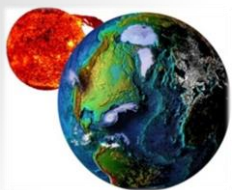
Satellite Product Analysis and Distribution Enterprise System

SPADES is a demonstration system for producing GOES-R L2+ SWx products. This 3-year project is funded through the GOES-R Risk Reduction program and can be considered the prototype to an operational capability deployed on NWS systems. SPADES IOC is planned for 1QFY16 with FOC in 2QFY17.

Current Status:

- L2+ Algorithms complete
- Draft Level 1 requirements
- Developmental server now online
- Investigating ERRDAP utility
- PDR planned for 1QFY15
- CI planned for 2QFY15 (Agile)
- Ongoing discussions with NWS





Space Weather Team

GOES-NOP: Corrected EUV data



Accomplishment: Reprocessed and released corrected GOES EUV data with supporting documentation for:

- GOES 13-15 (2006-2013)
- 1-minute and daily cadences
- 3 primary instrument channels
(remaining 2 channels not released)

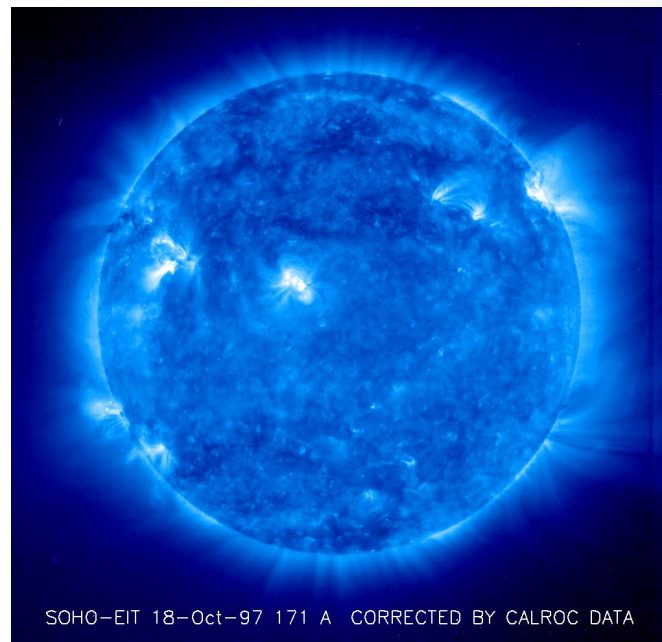
Applications:

- Corrections were implemented at SWPC. RT Data will be used for Air Force satellite drag model
- EUV solar flare collaboration

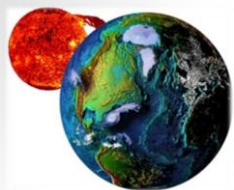
Next steps:

- Correct and release 10-s data
- Automate and do further corrections (submitted as a NASA proposal)

Participants – **J. Machol**, R. Viereck (SWPC), M. Husler (SWPC), D. Stone (SWPC) and **D. Wilkinson**



**Solar image in EUV from
SOHO EIT.**



Space Weather Team

DSCOVR: AAA Ready for Launch



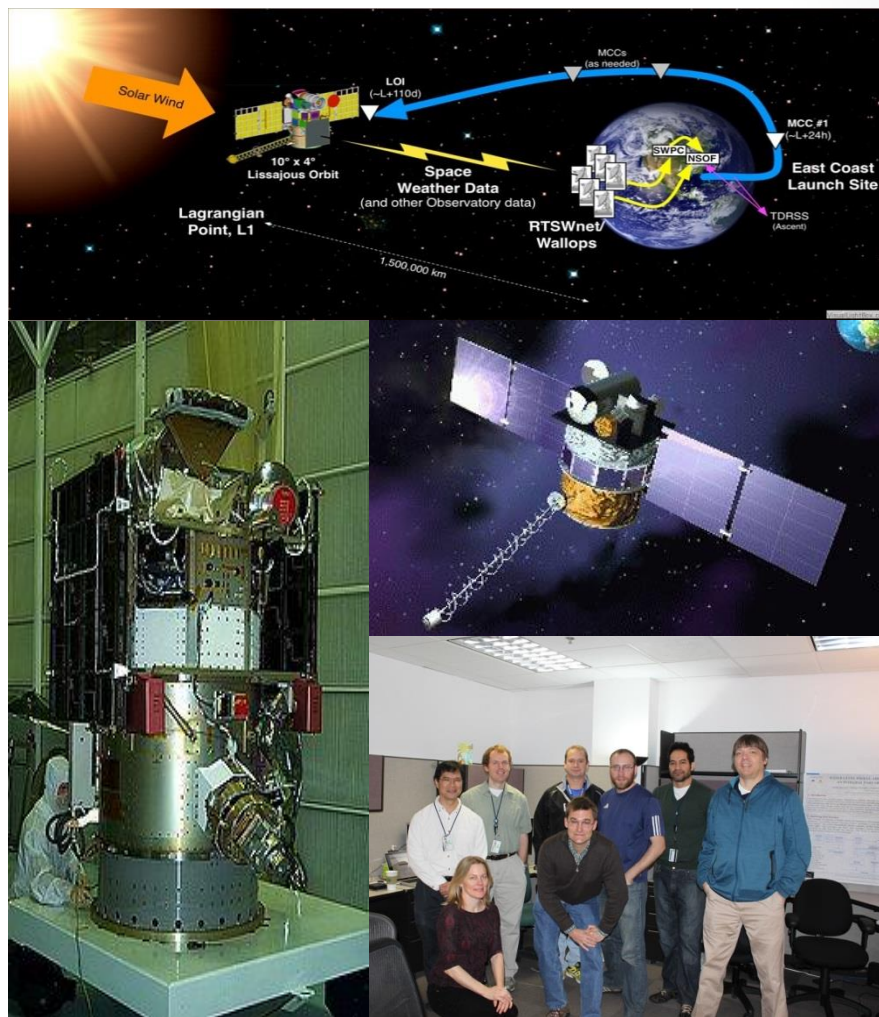
Program Status:

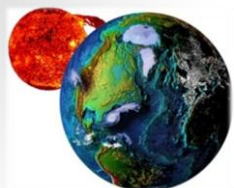
- NGDC is responsible for Archive, Access and Assessment (AAA) of DSCOVR solar wind & interplanetary magnetic field data.
- AAA support infrastructure developed using NGDC agile software process: Common Ingest (CI) // NGDC EXtract (NEXT).
- End-to-end compliance verified during DSCOVR Ground Readiness Tests (GRT) #1 and #2. All requirements to be closed during GRT #3.

NGDC is ready for DSCOVR launch

Upcoming Events:

- GRT3 – 26-29 Aug 14
- Ops Readiness Rev – 28-29 Oct 14
- Mission Readiness Rev – 31 Dec 14
- Launch Readiness Rev – 12 Jan 15
- DSCOVR Launch – 13 Jan 15





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TSIS: Total Solar Irradiance Sensor



Program Status:

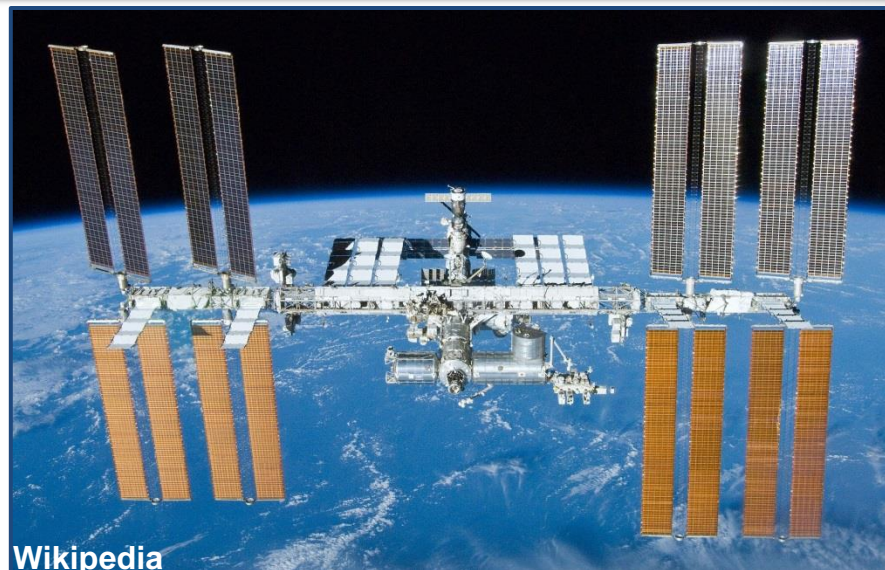
Planning for TSIS on the International Space Station (ISS) continues regardless of ominous signs from Congress. At risk is the 35-year record of Total Solar Irradiance¹. ISS/TSIS is slated for a FY17 launch.

The scientific community mostly agrees that solar variability has only a minor effect on climate change. (Kopp / Lean / Lockwood)

However . . .

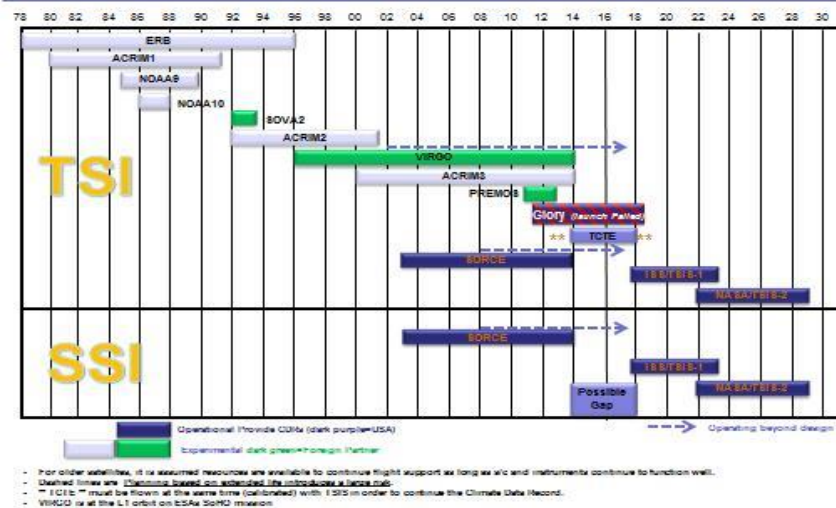
From Breitbart News - A recent Chinese publication claims that the *"impact of carbon dioxide on climate change may have been overstated, with solar activity giving a better explanation of changes in the Earth's temperature"* – more on this later

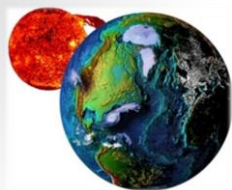
¹Note: Also at risk is the \$200K planned NGDC FY15 funding.



Wikipedia

Total and Spectral Solar Irradiance





Space Weather Team

Spacecraft Charging: Preparing for FY15



Satellite Anomalies

Benefits of a Centralized Anomaly Database and Methods for Securely Sharing Information Among Satellite Operators

David A. Galvan, Brett Hemenway, William Welser IV,
Dave Baiocchi



Publications:

Denig, W.F., R.J. Redmon, J.V. Rodriguez and J.H. Allen, "Book Review: "Satellite Anomalies - Benefits of a Centralized Database and Methods for Securely Sharing Information Among Satellite Operators" by David A Galvan, Brett Hemenway, William Welser IV and Dave Baiocchi", *Space Weather Journal*, Accepted, 31 Jul 14.

Presentations:

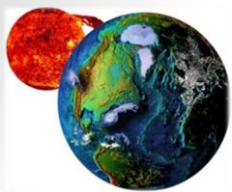
Redmon, R.J., J.V. Rodriguez, W.F. Denig, P. Loto'aniu and J.C. Green, *Safeguarding Satellites from Space Weather: NOAA Satellite Anomaly Tools and Services* [Poster], **R.J. Redmon, J.V. Rodriguez, W.F. Denig, P. Loto'aniu and J.C. Green,** *Spacecraft Charging Technology Conference*, 23-27 June 2014, Pasadena, CA.

Rodriguez, J., R. Redmon and W. Denig, *Safeguarding Satellites from Space Weather: NOAA Satellite Anomaly Tools and Services* [Invited Oral], *Spacecraft Anomalies and Failures Workshop II*, 24-25 July 2014, Chantilly, VA.

Other Activities:

Classified discussions with Steve Peterson – 15 June

Initiative: \$366K (year 1)



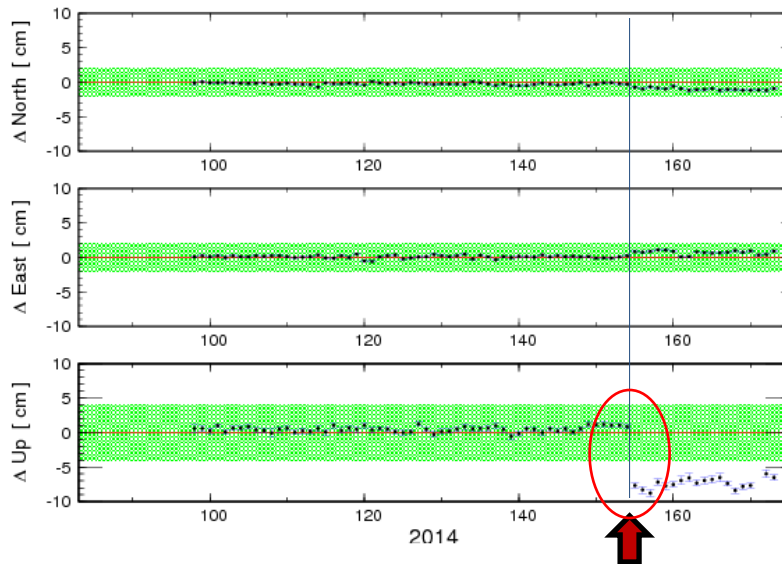
CORS-GPS Team

CORS : Shifting Station Height

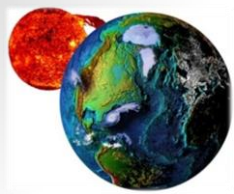


ORSB: Daily minus Published IGS08 Position

N [cm] = $-0.43(\pm 0.37)$ E [cm] = $0.23(\pm 0.35)$ U [cm] = $-1.51(\pm 3.50)$



On 04 Jul 14 the GPS receiver at Newport, OR (station: ORSB) reported a sudden shift downward. The source of this transition was initially unknown.



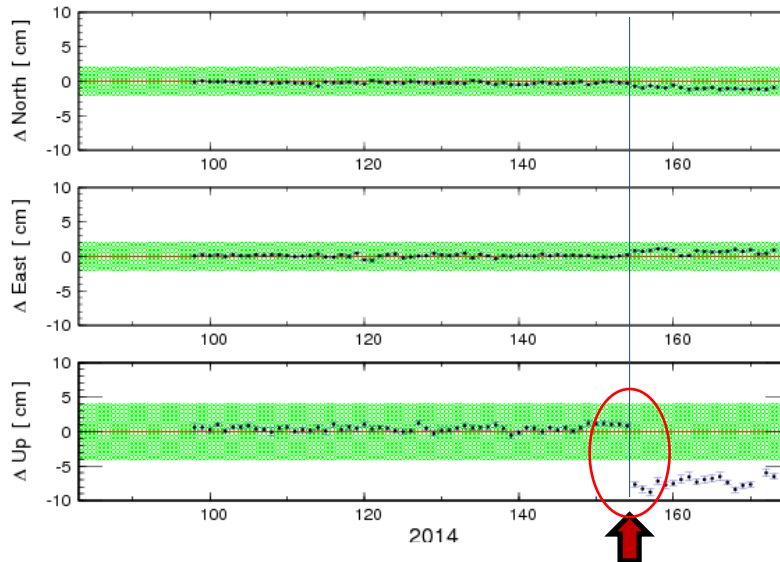
CORS-GPS Team

CORS : Shifting Station Height



ORSB: Daily minus Published IGS08 Position

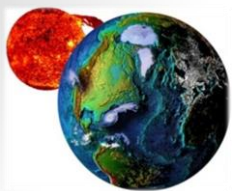
N [cm] = $-0.43(\pm 0.37)$ E [cm] = $0.23(\pm 0.35)$ U [cm] = $-1.51(\pm 3.50)$



On 04 Jul 14 the GPS receiver at Newport, OR (station: ORSB) reported a sudden shift downward. The source of this transition was initially unknown.

Mystery solved – The shifting height was traced to an overeager station manager having installed anti-bird spikes on everything including the GPS antenna.





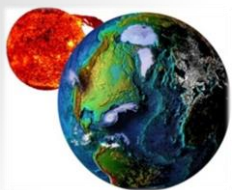
Ionospheric Sounding Team

VIPIR: Jang Bogo Station, Antarctica



Terry Bullett and Justin Mabie are contracted to assist the Korean Polar Research Agency (KOPRI) install a world-class **Vertical Incidence Pulsed Ionospheric Radar (VIPIR)** at the new Jang Bogo Station. Terry and Justin will be traveling to the antarctic this coming winter (Nov '14 – Feb '15) to install the new VIPIR.





Ionospheric Sounding Team

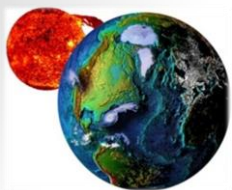
VIPIR: VIPIR Data Loss (Information Only)

Concern: VIPIR raw data are temporarily stored on backup disks which have been failing at an alarming rate.

- Current scheme to save L0 data (100 TB/year/site for 3 sites)
 - Record on hard disks, backup disks onto LTO tape at STP
 - About 15% of the disks are failing → **Permanent Data Loss**
 - Procedure to transfer to tape is too time consuming
- Investigating a new scheme
 - Record LTO tapes in the field
 - 16TB RAID array at each field site
 - Still leaves the issue of what to do in the long term
- Meanwhile, L1 data should go into TLS
 - “CLASS” decision stalled due to volume
 - Not enough spinning disk (2-3 TB/year)
 - The only remaining copy of these data

Status: The IS team is working with Dave Fischman on potential solutions to L0 & L1.





WDS for Geophysics

Cosmic Rays: Archive Assessment

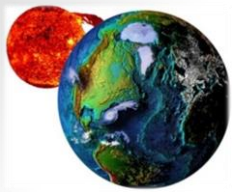
Peg Shea and **Don Smart** spent the week of 09-June at STP assessing the status of our cosmic ray holdings. The definitive electronic record of cosmic rays for 1953-present is the CAWSES database which is managed by the [WDC for Cosmic Rays](#) (Nagoya) and made available [online](#) through STP.

Duplicate analog records have been removed from the official archives and are awaiting transfer to the FRC (Denver) with a 5-year destruction notice.

Also reviewed were the original Forbush records the bulk of which (~80%) were digitized via the CDMP prior to the termination of this program.

[CAWSES](#) – Climate and Weather of the Sun-Earth System





OUTLINE

Solar & Terrestrial Physics Division

STP Division Overview

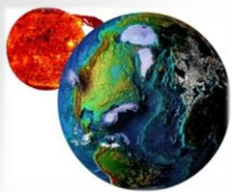
Milestones & Metrics

Program Updates

➔ Special Interest Items

Latest from the EOG

Issues & Summary



Special Interest Item

NASA: A Travesty (One man's opinion)

A good friend to NOAA's Space Weather was summarily dismissed by NASA Administrator for perceived failures in job performance.

NASA Heliophysics Director Fired

By **Dan Leone** | Jun. 10, 2014

UPDATED June 16 at 11:25 a.m. EDT

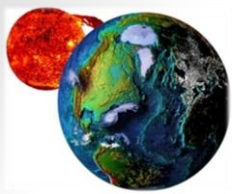
WASHINGTON — The director of NASA's Heliophysics Division has been fired after just nine months on the job for what his supervisor characterized as leadership and management failures, according to internal agency memos obtained by SpaceNews.

David Chenette, a veteran solar scientist who came to NASA from industry Sept. 30, will leave his position June 20, according to an official termination notice dated June 6 and signed by NASA Associate Administrator for Science John Grunsfeld, Chenette's supervisor.

"You have demonstrated little effort to engage your personnel and provide an inclusive workplace that fosters development to their full potential, despite being instructed that this was your primary objective when you were selected for this position," Grunsfeld said in the notice, adding that the former Lockheed Martin executive had sown "confusion and apprehension in the scientific community."



David Chenette, a veteran solar scientist who came to NASA from industry Sept. 30, will leave his position June 20. Credit: NASA photo



Special Interest Item

Critical Science: Solar Variability & Climate Change



Reporter's Question: *"My question has to do with an assertion that the earth is getting colder, not warmer . . . credible sources. . . weakening solar activity."*

Seeking Expert Advice:

Greg Kopp – *"solar activity . . . is not canceling anthropogenic warming effects"*

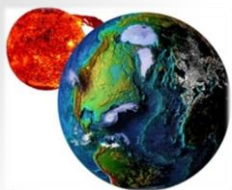
Frank Hill – *"another example of bad reporting"*

Jim Butler – *"sophomoric analysis I'm afraid"*

Mike Lockwood – *"in a word balderdash"*

Z. XinHua and F. XueShang (2014), Periodicities of Solar Activity and the Surface Temperature Variation of the Earth and Their Correlations, *Chinese Science Bulletin*, 59, pp. 1284-1292. DOI: 10.1360/972013-1089 [\[Peer Reviewed\]](#)





OUTLINE

Solar & Terrestrial Physics Division

STP Division Overview

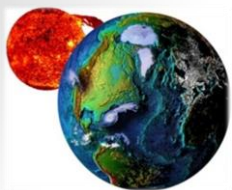
Milestones & Metrics

Program Updates

Special Interest Items

➔ Latest from the EOG

Issues & Summary

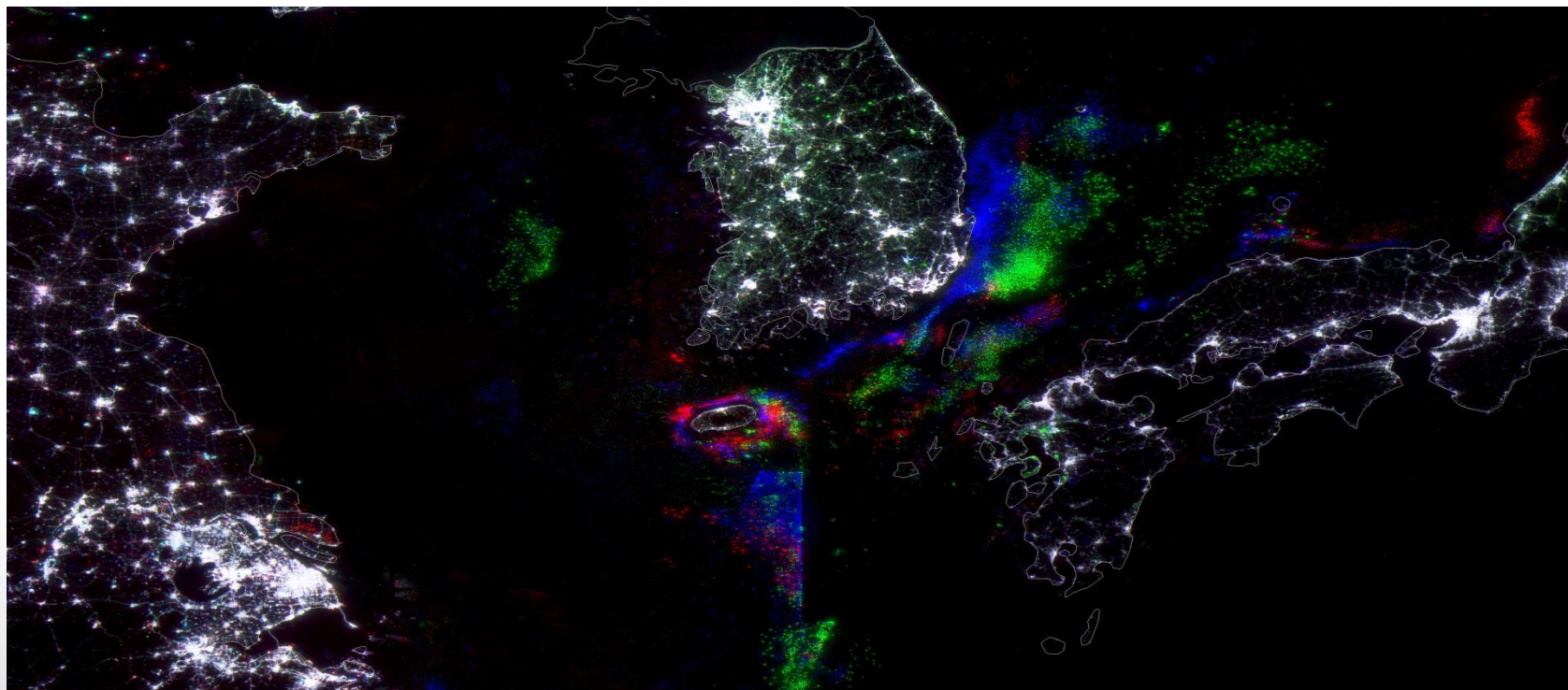


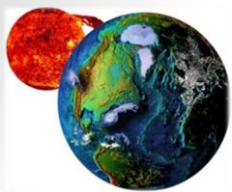
Earth Observations Group

EOG: Monitoring Fishing Compliance



VIIRS and DMSP share a unique capability to detect lit fishing boats at night. EOG supplies nightly geolocated VIIRS data to fishery agencies in Japan, Korea, Peru and Thailand. Data are used to detect illegal fishing in restricted areas, transgressions across Exclusive Economic Zone boundaries, tracking of shifting fishing grounds and spatial analysis of fishing effort. This color composite combines VIIRS nighttime data from October 2012 (blue), January 2013 (green) and May 2014 (red) against a backdrop of stable nighttime lights (white).



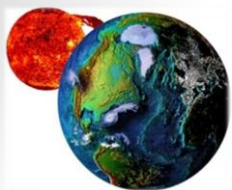


Earth Observations Group

EOG: Effect of Adding M11 Channel (1 of 4)

BACKGROUND

- NGDC developed a multispectral nighttime VIIRS fire product that uses Planck curve fitting to calculate the temperature, source size and radiant heat of combustion sources worldwide.
- Due to under-sampling of the Planck curve, approximately half of the detections go without the calculations.
- Elvidge submitted a CCR to add M11 and drop M7 from the nighttime collections. (CCR = Configuration Change Request)
- On June 12, 2014 VIIRS was inadvertently left in day-ops mode for two orbits.
- NGDC processed the data and compared the results with the standard product.
- CCR was approved on August 1, 2014



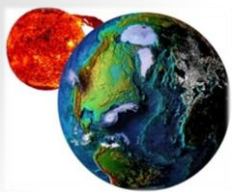
Earth Observations Group

EOG: Effect of Adding M11 Channel (2 of 4)

Adding M11 doubled the number of detections with Planck curve fits

	Standard Product	Add M11 / drop M7
Multiband Detections	3258	3454
Planck curve fits	1586 = 48.7%	3334 = 96.5%

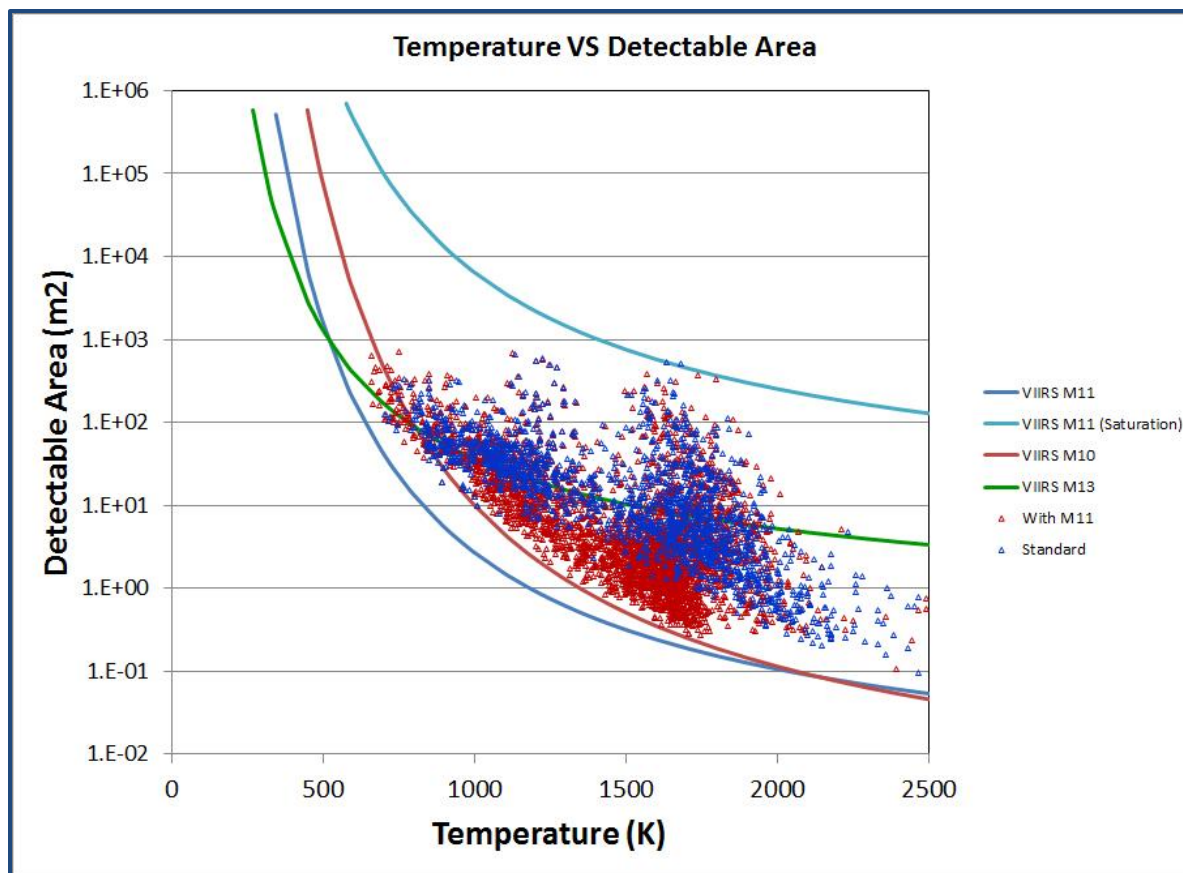
Subpixel M11 saturation detected in two pixels = 0.06%

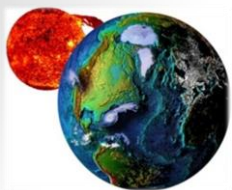


Earth Observations Group

EOG: Effect of Adding M11 Channel (3 of 4)

Adding M11 expands the usable detections to smaller source areas



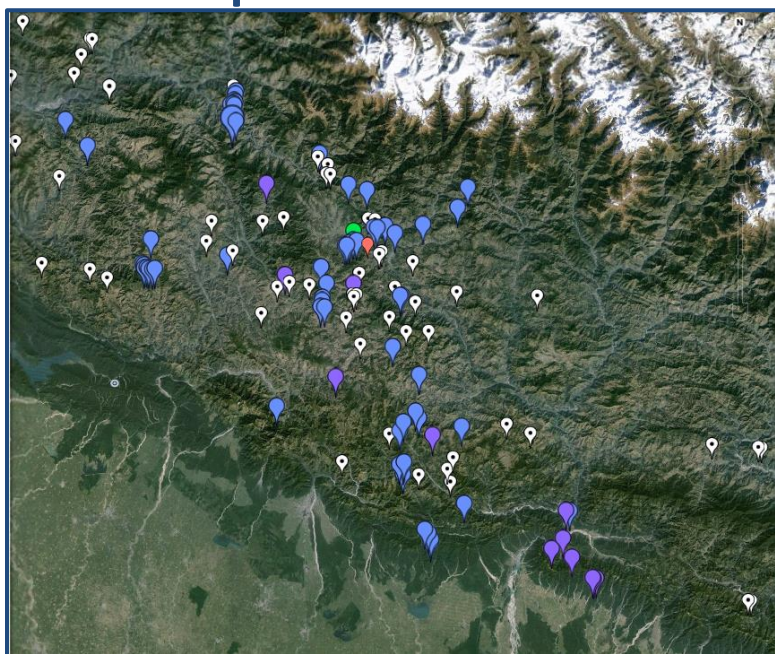


Earth Observations Group

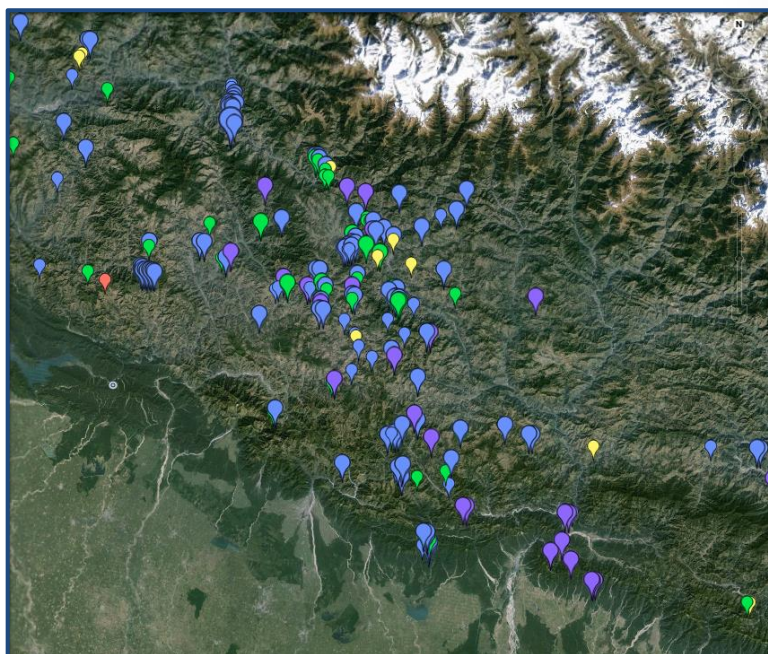
EOG: Effect of Adding M11 Channel (4 of 4)

Fires north of Delhi, India

White placemarks have no Planck curve fits









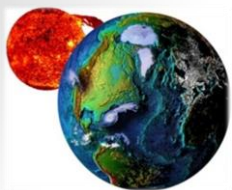
Standard Product



Adding M11, dropping M7

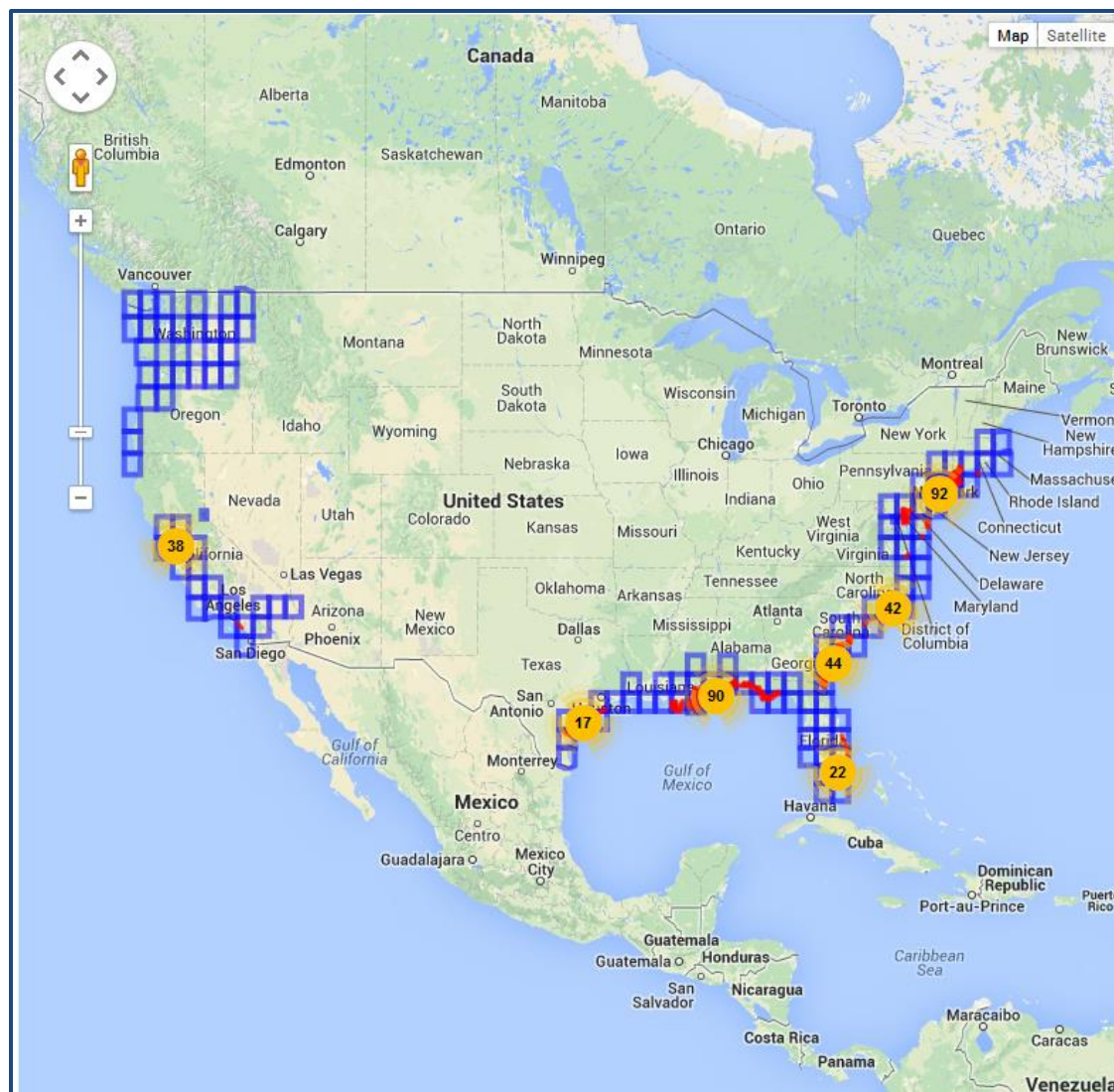
Place mark color legend:

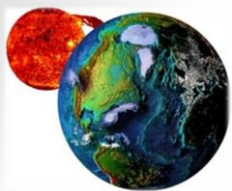
					
White	Purple	Blue	Green	Yellow	Red
Non-conforming detections	$400 < T < 1000$	$1000 < T < 1200$	$1200 < T < 1400$	$1400 < T < 1600$	$1600 < T < 3000$



Earth Observations Group

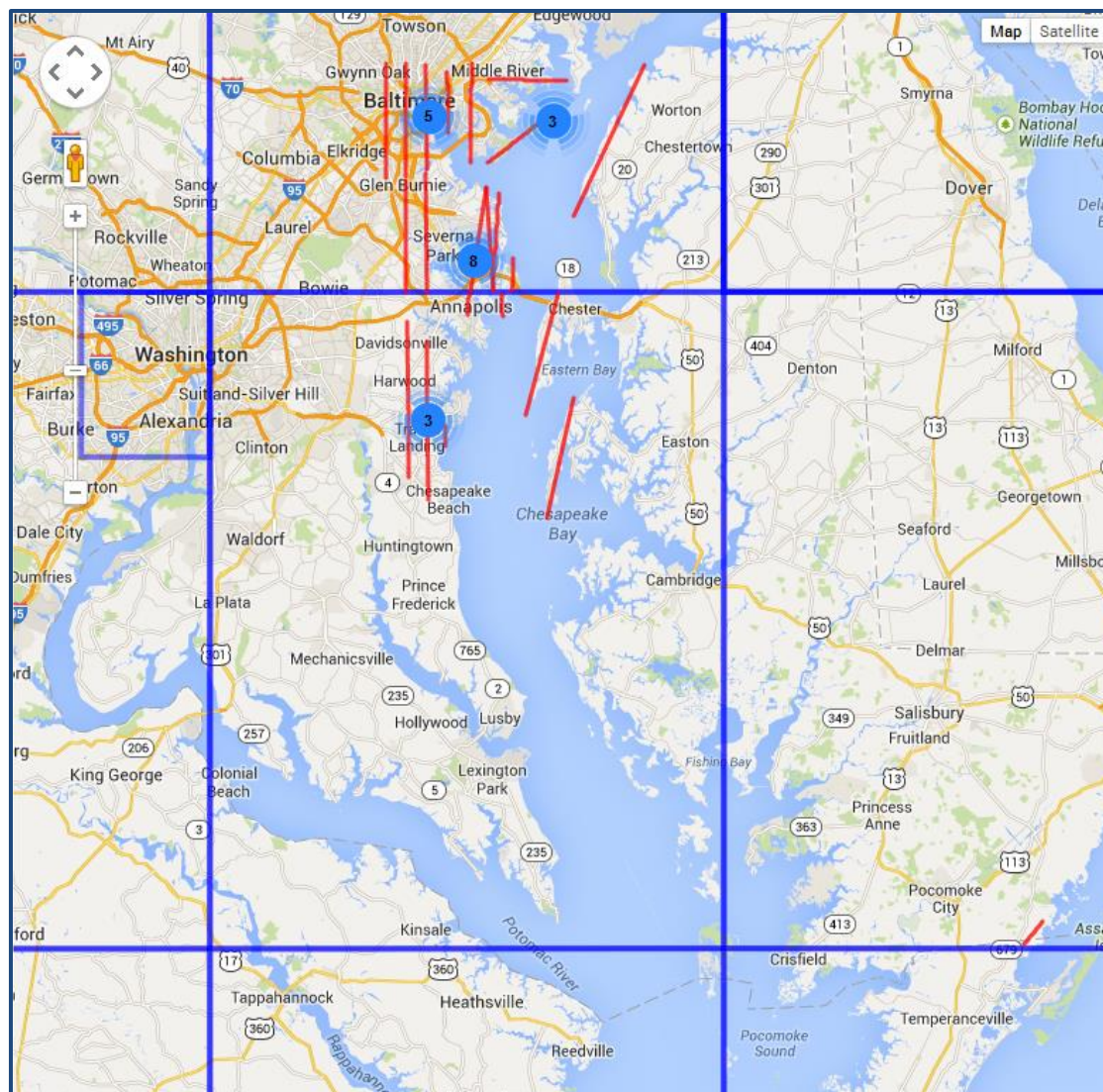
EOG: Multilens Air Photo Web Demo (1 of 4)

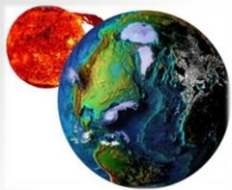




Earth Observations Group

EOG: Multilens Air Photo Web Demo (2 of 4)





Earth Observations Group

EOG: Multilens Air Photo Web Demo (3 of 4)

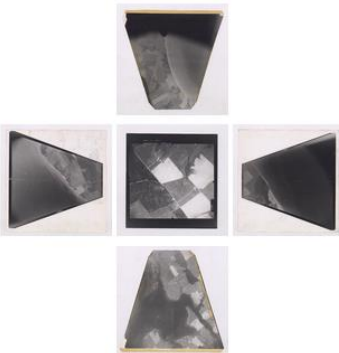
Flight Line Information

Pack Label: N/A Date: 11/1/1933
Pack Number: N/A Accession Number: 388
Pack Annotation: N/A Accession Annotation: N/A

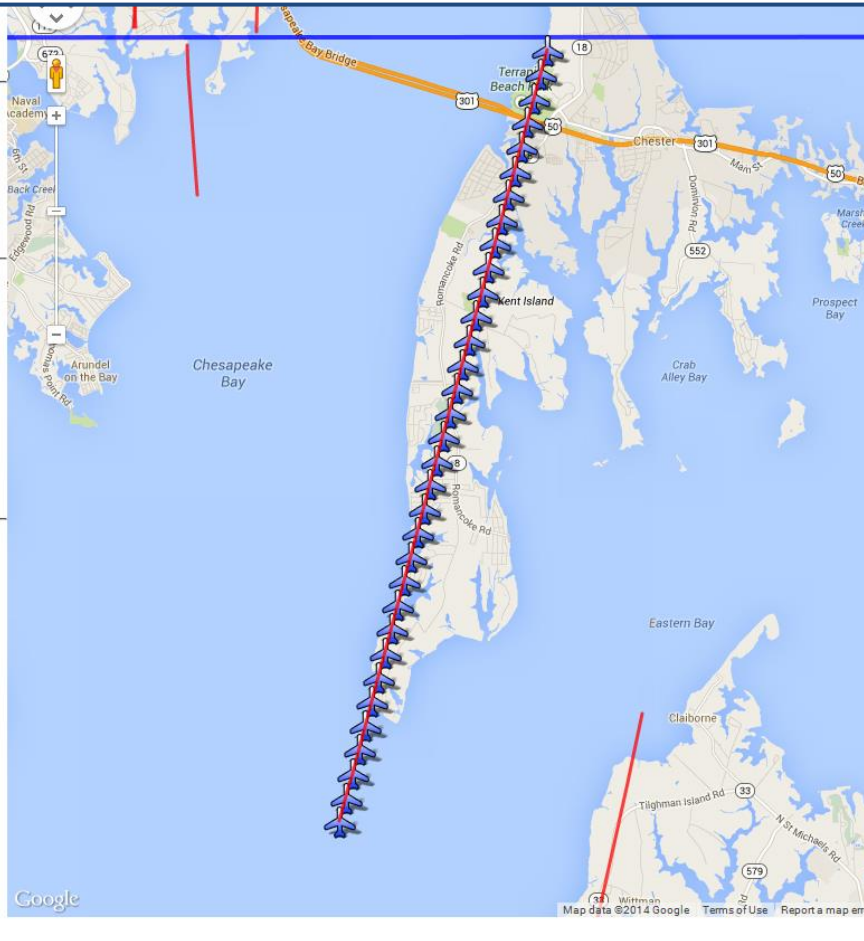
Frame Information

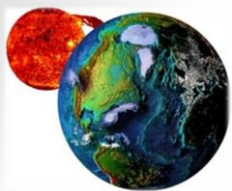
Start Frame: 213
End Frame: 245
Current Frame: 234 (22/33)
Number of Lenses: 5
Number of Images: 5
Notes: N/A

Preview



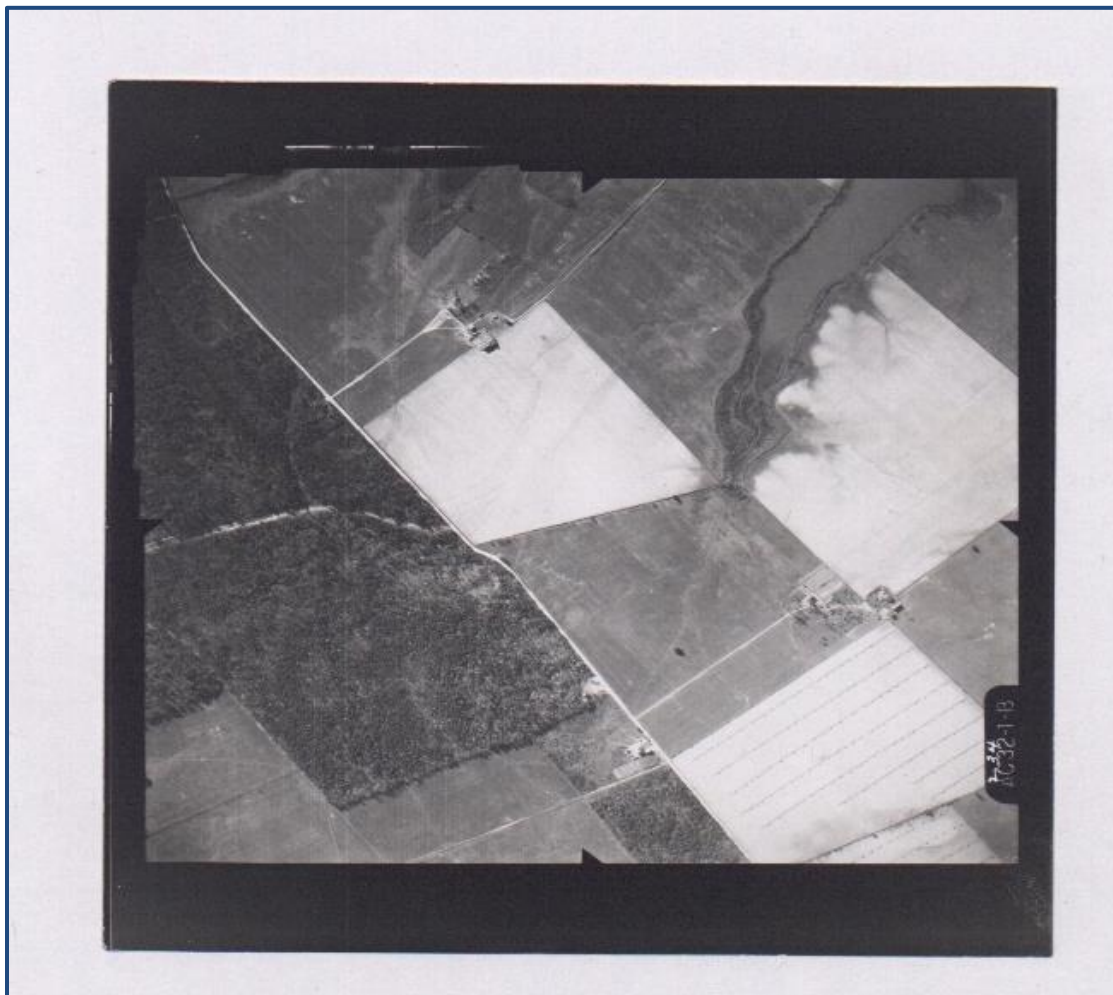
[Full Resolution Download](#)

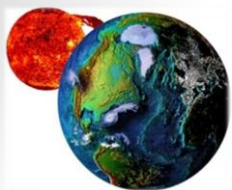




Earth Observations Group

EOG: Multilens Air Photo Web Demo (4 of 4)





OUTLINE

Solar & Terrestrial Physics Division

STP Division Overview

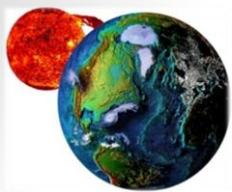
Milestones & Metrics

Program Updates

Special Interest Items

Latest from the EOG

➡ Issues & Summary

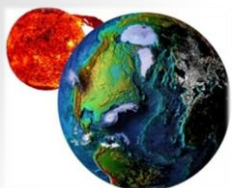


Issues & Summary

STP YTD FY14 Publications – 24 (1 of 4)

Publications (YTD):

- Alken, P., S. Maus, H. Lühr, **R.J. Redmon**, F. Rich, B. Bowman, and S. M. O'Malley (2014), Geomagnetic main field modeling with DMSP, *J. Geophys. Res. Space Physics*, 119, 4010–4025, doi:10.1002/2013JA019754. **Peer reviewed**
- Bordikar, M.R., W.A. Scales, A. Mahmoudian, H. Kim, P.A. Bernhardt, **R. Redmon**, A.R. Samimi, S. Brizcinski, and M.J. McCarrick (2014), Impact of active geomagnetic conditions on stimulated radiation during ionospheric second electron gyroharmonic heating, *J. Geophys. Res. Space Physics*, 119, pp. 548–565, doi:10.1002/2013JA019367. **Peer reviewed**
- Chowdhury, S., T. Shipman, D. Chao, **C.D. Elvidge**, M. Zhizhin and F-C Hsu (2014), Daytime Gas Flare Detection using Landsat-8 Multispectral, *Proc. IGRASS 2014 / 25th Canadian Symposium on Remote Sensing*, 13-18 July 2014, Quebec, Canada.
- Cllilverd, M.A., N. Cobbett, C.J. Rodger, J.B. Brundell, M.H. Denton, D.P. Hartley, **J.V. Rodriguez**, D. Danskin, T. Raita, and E.L. Spanswick (2013), Energetic electron precipitation characteristics observed from Antarctica during a flux dropout event, *J. Geophys. Res. Space Physics*, 118, 6921–6935, doi:10.1002/2013JA019067. **Peer reviewed**
- Coscieme, L., F.M. Pulselli, S. Bastianoni, **C.D. Elvidge**, S. Anderson and Paul C Sutton (2013), A Thermodynamic Geography: Night-Time Satellite Imagery as a Proxy Measure of Energy, *AMBIO A Journal of the Human Environment*. DOI: 10.1007/s13280-013-0468-5. **Peer reviewed**
- Denig, W.F., R.J. Redmon, J.V. Rodriguez**, and **J.H. Allen**, "Book Report: "Satellite Anomalies - Benefits of a Centralized Database and Methods for Securely Sharing Information Among Satellite Operators" by David A Galvan, Brett Hemenway, William Welser IV and Dave Baiocchi", *Space Weather Journal*, Accepted 31 Jul 14.
- Elvidge, C.D.** (2013), Space Based Surveillance Tools for Monitoring of Fisheries, *Proceedings of the Asian Conference on Remote Sensing*, Bali, India, 20-24 Oct 2013.
- Elvidge, C.D., K. Baugh, F-C Hsu** and **M. Zhizhin** (2013), SNPP Data Access of Agricultural Monitoring, *Proceedings of the Asian Conference on Remote Sensing*, Bali, India, 20-24 Oct 2013.

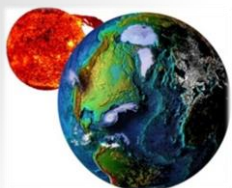


Issues & Summary

STP YTD FY14 Publications – 24 (2 of 4)

Publications (continued):

- Erwin, E.H., H.E. Coffey, W.F. Denig**, D.M. Willis, R. Henwood and M.N. Wild (2013), The Greenwich Photoheliographic Results (1874 – 1976): Initial Corrections to the Printed Publications, *Solar Physics*, 288, pp. 157-170. doi: 10.1007/s11207-013-0310-z **[Peer reviewed]**
- Hartley, D.P., M.H. Denton, **J.C. Green**, T.G. Onsager, **J.V. Rodriguez** and H.J. Singer (2013), Case Studies of the Impact of High-speed Solar Wind Streams on the Electron Radiation Belt at Geosynchronous Orbit: Flux, Magnetic Field and Phase Space Density, *J. Geophys. Res.*, 118, pp. 6964–6979, doi:10.1002/2013JA018923. **[Peer reviewed]**
- Hartley, D.P., M.H. Denton, and **J.V. Rodriguez** (2014), Electron Number Density, Temperature and Energy Density at GEO and Links to the Solar Wind: A Simple Predictive Capability, *J. Geophys. Res.*, 119, pp. 4556-4571. doi:10.1002/2014JA019779 **[Peer reviewed]**
- Knipp, D.J., T. Matsuo, L. Kilcommons, A. Richmond, B. Anderson, H. Korth, **R. Redmon**, B. Mero, and N. Parrish (2014), Comparison of Magnetic Perturbation Data from LEO Satellite Constellations: Statistics of DMSP and AMPERE, *Space Weather*, 12, pp. 2–23, doi:10.1002/2013SW000987. **[Peer Reviewed]**
- Kress, B.T., **J.V. Rodriguez**, J.E. Mazur and M. Engel (2013), Modeling Solar Proton Access to Geostationary Spacecraft with Geomagnetic Cutoffs, *Adv. Space Res.*, 52, 1939-1948. <http://dx.doi.org/10.1016/j.asr.2013.08.019> **[Peer reviewed]**
- Rodriguez, J.V.** , J.C. Krosschell and J.C. Green (2014), Intercalibration of GOES 8-15 Solar Proton Detectors, *Space Weather*, 12, 92-109. doi: 10.1002/2013SW000996.
- Rodriguez, J.V.**, and T.G. Onsager (2014), Solar Energetic Particle Measurements Intercalibration Workshop, 11 April 2014, *Space Weather*, 12, 129–130, doi:10.1002/2014SW001048. **[Peer reviewed]**
- Sandholt, P.E., C.J. Farrugia and **W.F. Denig** (2014), M-I Coupling Across the Auroral Oval at Dusk and Midnight: Repetitive Substorm Activity Driven by Interplanetary Coronal Mass Ejections (CMEs), *Ann. Geophys.*, 32, 333-351. doi: 10.5194/angeo-32-333-2014 **[Peer Reviewed]**

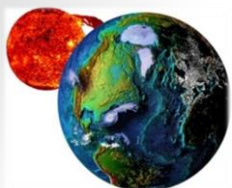


Issues & Summary

STP YTD FY14 Publications – 24 (3 of 4)

Publications (continued):

- Simon Wedlund, M., M.A. Clilverd, C.J. Rodger, K. Cresswell-Moorcock, N. Cobbett, P. Breen, D. Danskin, E. Spanswick, and **J.V. Rodriguez** (2014), A Statistical Approach to Determining Energetic Outer Radiation Belt Electron Precipitation Fluxes, *J. Geophys. Res.*, 119, pp. 3961–3978. doi:10.1002/2013JA019715 [**Peer reviewed**]
- Snow, M., M. Weber, **J. Machol**, R. Viereck and E. Richard (2014) Comparison of Magnesium II Core-to-Wing Ratio Observations During Solar Minimum 23/24, *J. Space Weather Space Clim.*, 4, A04, doi:10.1051/swsc/2014001. [**Peer reviewed**]
- Soloviev, A., A. Khokhlov, E. Jalkovsky, A. Berezhko, A. Lebedev, E. Kharin, I. Shestolaply, M. Mandeia, V. Kuznetsov, T. Bondar, **J. Mabie**, M. Nisilevich, V. Nechitailenko, A. Rybkina, O. Pyatygina and A. Shibaev (2013), The Atlas of the Earth's Magnetic Field, eds. A. Gvishiani, A. Frolov and V. Lapshin, Publ. GC RAS, Moscow, 361 p. doi:10.2205/2013/BS011_Atlas_MPZ
- Turner, D.L., V. Angelopoulos, S.K. Morley, M.G. Henderson, G.D. Reeves, W. Li, D.N. Baker, C.-L. Huang, A. Boyd, H.E. Spence, S.G. Claudepierre, J.B. Blake and **J.V. Rodriguez** (2014), On the Cause and Extent of Outer Radiation Belt Losses During the 30 September 2012 Dropout Event, *J. Geophys. Res.*, 119, pp. 1530–1540, doi:[10.1002/2013JA019446](https://doi.org/10.1002/2013JA019446). [**Peer Reviewed**]
- Turner, D.L., V. Angelopoulos, W. Li, J. Bortnik, B. Ni, Q. Ma, R.M. Thorne, S.K. Morley, M.G. Henderson, G.D. Reeves, M. Usanova, I.R. Mann, S.G. Claudepierre, J.B. Blake, D.N. Baker, C.-L. Huang, H. Spence, W. Kurth, C. Kletzing and **J.V. Rodriguez** (2014), Competing Source and Loss Mechanisms Due to Wave-Particle Interactions in Earth's Outer Radiation Belt During the 30 September to 3 October 2012 Geomagnetic Storm, *J. Geophys. Res.*, 119, pp 1960–1979, doi:[10.1002/2014JA019770](https://doi.org/10.1002/2014JA019770). [**Peer Reviewed**]
- Willis, D.M., **H.E. Coffey**, R. Henwood, **E.H. Erwin**, D.V. Hoyt, M.N. Wild and **W.F. Denig** (2013), The Greenwich Photo-heliographic Results (1874 – 1976): Summary of the Observations, Applications, Datasets, Definitions and Errors, *Solar Physics*, 288, pp. 117-139. doi 10.1007/s11207-013-0311-y [**Peer reviewed**]



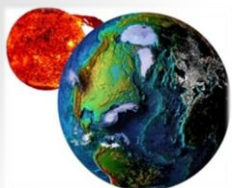
Issues & Summary

STP YTD FY14 Publications – 24 (4 of 4)

Publications (continued):

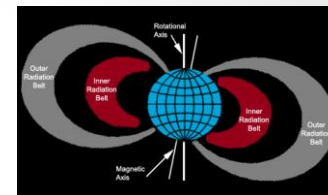
- Willis, D.M., R. Henwood, M.N. Wild, **H.E. Coffey**, **W.F. Denig**, **E.H. Erwin** and D.V. Hoyt (2013), The Greenwich Photo-heliographic Results (1874 – 1976): Procedures for Checking and Correcting the Sunspot Digital Datasets, *Solar Physics* , 288, pp. 141-156. doi 10.1007/s11207-013-0312-x [**Peer reviewed**]
- Yuyu Zhou, Y., S.J. Smith, **C.D. Elvidge**, K. Zhao, A. Thomson and M. Imhoff (2014), A Cluster-based Method to Map Urban Area from DMSP/OLS Nightlights, *Remote Sensing of Environment*, 147, pp. 173-185. [**Peer reviewed**]

Total accepted or published: 24
Peer Reviewed: 18



Issues & Summary

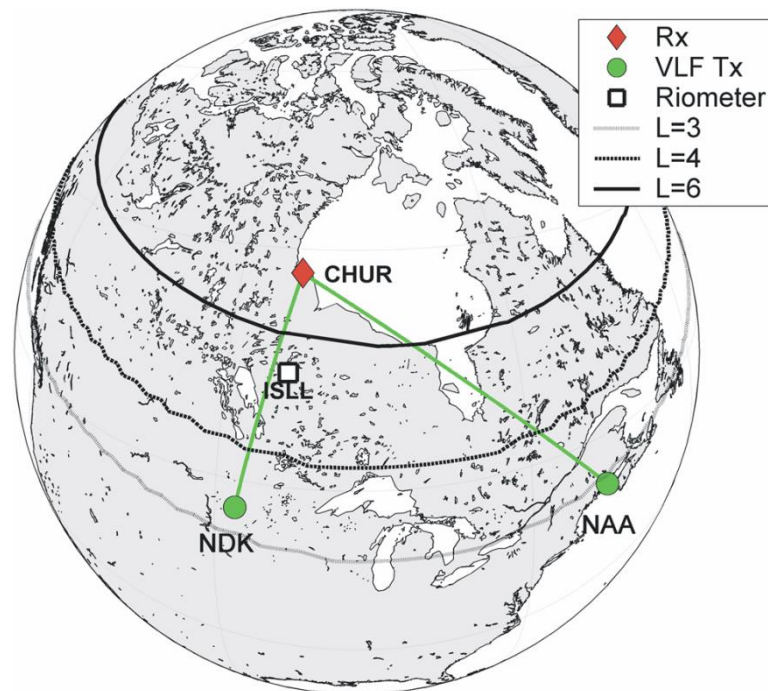
Featured Publication

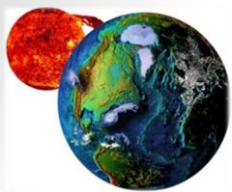


Simon Wedlund, M., M.A. Clilverd, C.J. Rodger, K. Cresswell-Moorcock, N. Cobbett, P. Breen, D. Danskin, E. Spanswick, and **J.V. Rodriguez** (2014), A Statistical Approach to Determining Energetic Outer Radiation Belt Electron Precipitation Fluxes, *J. Geophys. Res. (Space Physics)*, 119, pp. 3961-3978, doi: 10.1002/2013JA019715.

Key Points:

- Particle scattering is responsible for electron loss from within the van Allen radiation belts.
- How do magnetic storms affect the nature of electron precipitation?
- Combine measurements of radio-wave propagation with POES particle observations.
- Radiowave propagation was the historical basis for space weather in Boulder (aside).





Issues & Summary

Solar & Terrestrial Physics Division

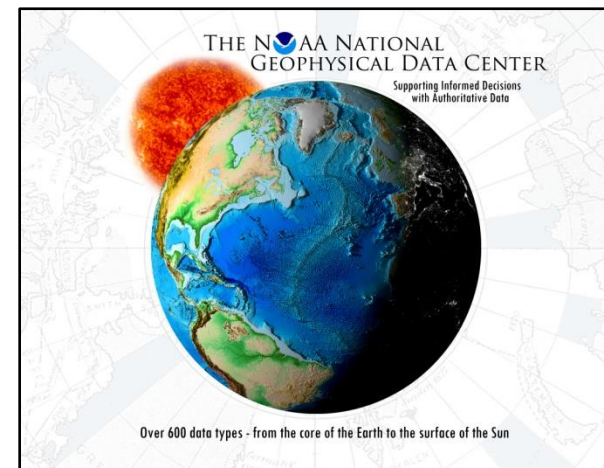
- ✓ NGS Aerial Photography (4QFY13) – **Some positive movement**
- ✓ GOES-R SWx Algorithm Risks (4QFY13) – **Continuing to improve**
- ✓ Fed hiring restrictions having mission impact (3QFY12) – **Much better**
- ✓ GOES-R L2+ SWx algorithms (3QFY11) – *Path to operations defined*
 - Frozen Baseline / Algorithm Readiness – Waivers – **Watch Item**
 - GOES L0 Data Not in CLASS – **Solved (trust but verify)**
 - GOES-R Data Management Tasks – GOES-R Data Mngr – **NLAI**

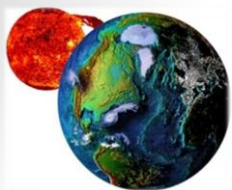
Metrics

Papers (FY14-YTD): 24

✓ Peer Reviewed: 18

Presentations (FY14-YTD): 53





QUESTIONS?

NGDC ICE CREAM SOCIAL
THURSDAY – 21 AUGUST – 3:00-5:00
(GC124 – CLASSROOM)
--- Kids Welcome ---

